

CLAIMS

1.

An adjustable swivel base assembly comprising:

- (a) a planar mounting base plate,
- (b) a pair of laterally spaced apart columnar supports affixed at a first longitudinal end thereof to said base plate and extending perpendicularly therefrom,
- (c) a planar bearing plate stationarily supported on a second longitudinal end of said supports opposite said first longitudinal end thereof,
- (d) a planar first bearing stationarily supported on said bearing plate on the side thereof remote from said supports,
- (e) a planar second bearing stationarily affixed to said bearing plate and spaced from and coaxial with said first bearing,
- (f) a planar rotatable swivel plate supported on and sandwiched slidably between said first and second bearings for rotation in a plane generally parallel to the major planes of said base plate and of said first and second bearings, said rotatable swivel plate being adapted to carry a load to be swiveled by said rotation of said rotatable plate, and
- (g) an indexable locking system for selectively locking said rotatable swivel plate in any one of a plurality of angularly spaced positions.

2.

The assembly set forth in claim 1 wherein said supports comprise a pair of obround risers symmetrically mounted to said base plate with an angled orientation relative to one another such that their major planes define an included angle therebetween of about 40°.

3.

The assembly set forth in claim 2 wherein each said riser is made as an aluminum extrusion having a cross sectional contour to form the obround contour whereby the riser has parallel flat side walls merging with semicircular end walls.

4.

The assembly set forth in claim 3 wherein the interior surface of each said curved riser end wall has individually associated therewith an integral, longitudinally extending screw boss defining an interior channel with a circular wall surface encompassing about 270° and having a diameter for slidably receiving therethrough an associated mounting screw inserted through an associated hole in said base plate and threadably secured at one end thereof in said bearing plate such that said bearing plate is fixably and securely screw-mounted on and supported by said risers which in turn are thereby securely screw-affixed to and supported by said mounting base plate.

5.

The assembly set forth in claim 1 wherein said swivel plate has a central through-hole defined by a bearing bore extending from a planar first side of said swivel plate adjacent said first bearing to a junction at an annular shoulder with a bearing counterbore in said swivel plate that in turn opens to a second planar side of said swivel plate remote from said first bearing, and wherein said first bearing has a raised circular central bearing boss received with a close clearance sliding fit in said bearing bore such that the said first side of said swivel plate rides slidably on an adjacent surface of said first bearing that encircles said first bearing boss, and wherein said second bearing also has a bearing boss portion that fits slidably within said plate bearing bore and has a radially extending marginal flange portion that rides slidably on said annular shoulder of said swivel plate through-hole defining said bearing bore and wherein said swivel plate is clamped by and between said first and second bearings, both of which are held affixed by studs extending to and fastened to said bearing plate.

6.

The assembly set forth in claim 5 wherein said first and second bearings are made of plastic such as ultra-high molecular weight (UHMW) polyethylene plastic material, and wherein said first and second plates are backed up with metal plates both top and bottom, i.e., a second bearing cover plate overlying said second bearing and with said bearing plate being made of metal, and further including fasteners constructed and arranged such to extend through the assembly of said first and second bearings and tensioned to a predetermined torque to minimize play or loose fit of said swivel plate and yet still allow the rotatable swivel plate to swivel freely relative to the remaining components of said base assembly.

7.

The assembly set forth in claim 1 wherein said swivel plate is provided with a predetermined universal pattern of threaded through-holes adjacent one side of said swivel plate bearings, as well as a mirror image symmetrical array of similar mounting holes adjacent the other side of said swivel plate bearings, said through holes being predetermined by design to match up with the mounting bolt pattern of the most popular models of downrigger mounting platforms that are to be removably attached to said rotatable swivel plate by mounting fasteners such as thumbscrews, threaded studs or the like.

8.

The assembly set forth in claim 1 wherein said indexable locking system comprises a negative gear-like profile formed in said face of said swivel plate adjacent said first bearing, said gear-like profile including an annular cavity defined by a recessed wall inset from and parallel to said swivel plate sides and bounded on its inner diameter by a cylindrical wall surface concentric with said bearings, said cavity recessed wall being bounded on its outer periphery by equally angularly spaced tooth peak surfaces that define an interrupted cylindrical surface of larger diameter than, and concentric with, said inner cylindrical wall surface, said gear-like profile further including a plurality of equally angularly spaced teeth cavities extending entirely radially outwardly from said interrupted cylindrical surface, said cavities being individually arranged between each of said pairs of tooth peak surfaces, and further including a locking pin supported by said bearing plate so as to be operable in said annular cavity to be spring biased into selective engagement with a selected one said teeth root cavities to thereby

lock said rotatable swivel plate at a fixed angular position relative to the remaining components of said base assembly, and upon withdrawal of said locking pin from said selected tooth cavity thereby enabling free rotation of said swivel plate relative to the remaining components of said base assembly.

9.

The assembly set forth in said claim 8 including a locking lever pivotally mounted to said bottom bearing plate and carrying said locking pin, said bearing plate and said first bearing each having arcuate slots formed therein through which said locking pin extends into said annular cavity for swinging in an arcuate travel path between engaged and disengaged positions relative to said teeth root cavities of said gear-like profile in said swivel plate, said lever being pivotally mounted to operate as a lever of the first class with one end carrying said locking pin and the opposite end carrying an operating handle, and further including a coil spring coupled between said lever and one of said risers such that said lever is normally spring biased to pivot in a direction to drive said locking pin toward the root or bottom of whichever negative tooth recess it is selectively registered.

10.

The assembly set forth in claim 9 wherein said lever handle is oriented to extend from said lever toward said mounting base plate.

11.

The assembly set forth in claim 9 wherein said lever handle is constructed and arranged such that it is swung in a direction outwardly away from said assembly to retract said locking pin out of registry with the selected negative locking teeth in said swivel plate and into the annular space between said cylindrical wall, surface and said teeth apices whereupon said swivel plate is free to swivel about the axis of said first and second bearings, and such that once unlocking force is removed from said lever by releasing said handle said spring is operable to bias said lever to force said locking pin against whichever tooth apex it may be registered, whereupon swivel motion of said swivel plate that registers said locking pin with an adjacent tooth cavity allows spring bias on said lever to snap force said pin into such cavity.

12.

The assembly set forth in claim 11 wherein said swivel plate has twelve of said tooth cavities, thereby providing locking positions at 30° angular increments for a full 360° swivel traverse of said swivel plate.

13.

The assembly set forth in claim 11 wherein the circumferentially spaced pair of tooth corners at the circumferentially opposite ends of each tooth apex are relatively sharp and have a small radius dimension to thereby produce a snap action drop in of said locking pin as said spring forces said lever in the lock-up direction.

14.

The assembly set forth in claim 11 wherein said negative tooth recesses are generated on a longitudinal centerline that is curved with the same radius as the arcuate path of travel of said locking pin whereby upon said lever being released, such curvature of each tooth recess allows a quick drop in action of said locking pin upon being initially registered with a selected tooth recess and then forced into such recess under the biasing force of said spring.

15.

The assembly set forth in claim 8 wherein the sidewalls of each said tooth recess are tapered so as to converge slightly radially outwardly of said annular cavity and toward the associated root surface of each said recess such that said tooth recess sidewalls reach a transverse dimension less than the diameter of said locking pin at a point in the travel path of said pin such that the locking pin cannot touch the bottom of said root surface of said tooth recess such that said locking pin seats, in locked position, against said sidewalls of the associated tooth recess without bottoming in the same.

16.

An adjustable swivel base assembly and track combination for swivel mounting on a fishing boat of downrigger and/or planar board masts used for fishing, said assembly comprising:

- (a) a planar mounting base plate,
- (b) a pair of laterally spaced apart columnar supports affixed at a longitudinal bottom end thereof to said base plate and extending perpendicularly upwardly therefrom,
- (c) a planar bottom plate stationarily supported on a longitudinal upper end of each said support opposite said bottom end thereof,
- (d) a planar bottom bearing stationarily supported on said bearing plate on the upper side thereof remote from said supports,
- (e) a planar top bearing stationarily affixed to said bearing plate and spaced upwardly therefrom and coaxial with said bottom bearing,
- (f) a planar rotatable swivel top plate supported on and sandwiched slidably between said top and bottom bearings for rotation in a plane generally parallel to the major planes of said base plate and said bearings, said rotatable swivel plate being adapted to carry a downrigger and/or planar board mast load to be swiveled by said rotation of said rotatable swivel top plate,
- (g) an indexable locking system for selectively locking said rotatable swivel top plate in any one of a plurality of angularly spaced positions, and
- (h) a mounting track adapted to be mounted on a gunnel or transom of a fishing boat, said track having side edge flanges with mutually facing in-turned lips, said assembly base plate being slidably mounted in said track with said track flange lips overlapping

said opposite side edges of said base plate, said base plate carrying locking means for releasably locking said base plate at a desired location along said track.

17.

The combination set forth in claim 16 wherein said supports comprise a pair of obround risers symmetrically mounted to said base plate with an angled orientation relative to one another such that their major planes define an included angle therebetween of about 40°.

18.

The combination set forth in claim 17 wherein each said riser is made as an aluminum extrusion having a cross sectional contour to form the obround contour whereby the riser has parallel flat side walls merging with semicircular end walls.

19.

The combination set forth in claim 18 wherein the interior surface of each said curved riser end wall has individually associated therewith an integral, longitudinally extending screw boss defining an interior channel with a circular wall surface encompassing about 270° and having a diameter for slidably receiving therethrough an associated mounting screw inserted through an associated hole in said base plate and threadably secured at one end thereof in said bearing plate such that said bearing plate is fixably and securely screw-mounted on and supported by said risers which in turn are thereby securely screw-affixed to and supported by said mounting base plate.

20.

The combination set forth in claim 16 wherein said swivel plate has a central through-hole defined by a bearing bore extending from a planar bottom side of said swivel plate adjacent said first bottom bearing to a junction at an annular shoulder with a bearing counterbore in said swivel plate that in turn opens to an upper planar side of said swivel plate remote from said bottom bearing, and wherein said bottom bearing has a raised circular central bearing boss received with a close clearance sliding fit in said bearing bore such that said bottom side of said swivel plate rides slidably on an adjacent upper surface of said bottom bearing that encircles said bottom bearing boss, and wherein said top bearing also has a bearing boss portion that fits slidably within said plate bearing bore and has a radially extending marginal flange portion that rides slidably on said annular shoulder of said swivel plate through-hole defining said bearing bore and wherein said swivel plate is clamped by and between said top and bottom bearings, both of which are held affixed by studs extending to and fastened to said stationary bearing plate.

21.

The combination set forth in claim 20 wherein said top and bottom bearings are made of plastic such as ultra-high molecular weight (UHMW) polyethylene plastic material, and wherein said top and bottom bearings are backed up with metal cover plates both top and bottom, i.e., a top bearing cover plate overlying said top bearing, said bottom bearing plate being made of metal to serve as the bottom bearing back-up metal cover plate, and further including fasteners constructed and arranged to extend through the assembly of said top and bottom bearings and tensioned to a predetermined torque to minimize play or loose fit of said swivel plate and yet still

allow the rotatable swivel plate to swivel freely relative to the remaining components of said base assembly.

22.

The combination set forth in claim 21 wherein said swivel plate is provided with a predetermined universal pattern of threaded through-holes adjacent one side of said swivel plate bearings, as well as a mirror image symmetrical array of similar mounting holes adjacent the other side of said swivel plate bearings, said through holes being predetermined by design to match up with the mounting bolt pattern of the most popular models of downrigger and/or planar board masts mounting platforms that are to be removably attached to said rotatable swivel plate by mounting fasteners such as thumbscrews, threaded studs or the like.

23.

The combination set forth in claim 20 wherein said indexable locking system comprises a negative gear-like profile formed in said face of said swivel plate adjacent said bottom bearing, said gear-like profile including an annular cavity defined by a recessed wall inset from and parallel to said swivel plate sides and bounded on its inner diameter by a cylindrical wall surface concentric with said bearings, said cavity recessed wall being bounded on its outer periphery by equally angularly spaced tooth peak surfaces that define an interrupted cylindrical surface of larger diameter than, and concentric with, said inner cylindrical wall surface, said gear-like profile further including a plurality of equally angularly spaced teeth cavities extending entirely radially outwardly from said interrupted cylindrical surface, said cavities being individually arranged between each of said pairs of tooth peak surfaces, and

further including a locking pin operably supported by said bearing plate so as to be operable in said annular cavity to be spring biased into selective engagement with a selected one of said teeth root cavities to thereby lock said rotatable swivel plate at a fixed angular position relative to the remaining components of said base assembly, and withdrawal of said locking pin from said selected tooth cavity thereby enabling free rotation of said swivel plate relative to the remaining components of said base assembly.

24.

The combination set forth in said claim 23 including a locking lever pivotally mounted to said bottom bearing plate and carrying said locking pin, said bearing plate and said bottom bearing each having arcuate slots formed therein through which said locking pin extends into said annular cavity for swinging in an arcuate travel path between engaged and disengaged positions relative to said teeth root cavities of said gear-like profile in said swivel plate, said lever being pivotally mounted to operate as a lever of the first class with one end carrying said locking pin and the opposite end carrying an operating handle, and further including a coil spring coupled between said lever and a stationary component of said base assembly such that said lever is normally spring biased to pivot in a direction to drive said locking pin toward the root or bottom of whichever negative tooth recess it is selectively registered.

25.

The combination set forth in claim 24 wherein said lever handle is oriented to extend downwardly from said lever toward said mounting base plate.

26.

The combination set forth in claim 25 wherein said lever handle is constructed and arranged such that it is swung in a direction outwardly away from said assembly to retract said locking pin out of registry with the selected negative locking teeth in said swivel plate and into the annular space between said cylindrical wall surface and said teeth apices whereupon said swivel plate is free to swivel about the axis of said top and bottom bearings, and such that once unlocking force is removed from said lever by releasing said handle said spring is operable to bias said lever to force said locking pin against whichever tooth apex it may be registered, whereupon swivel motion of said swivel plate that registers said locking pin with an adjacent tooth cavity allows spring bias on said lever to snap force said pin into such cavity.

27.

The combination set forth in claim 26 wherein said swivel plate has twelve of said tooth cavities, thereby providing locking positions at 30° angular increments for a full 360° swivel traverse of said swivel plate.

28.

The combination set forth in claim 26 wherein the circumferentially spaced pair of tooth corners at the circumferentially opposite ends of each tooth apex are relatively sharp and have a small radius dimension to thereby produce a snap action drop in of said locking pin as said spring forces said lever in the lock-up direction.

29.

The combination set forth in claim 26 wherein said negative tooth recesses are individually generated along a longitudinal centerline that is curved with the same radius as the arcuate path of travel of said locking pin whereby upon said lever being released, such curvature of each tooth recess allows a quick drop in action of said locking pin upon being initially registered with a selected tooth recess and then forced into such recess under the biasing force of said spring.

30.

The combination set forth in claim 29 wherein the sidewalls of each said tooth recess are tapered so as to converge slightly radially outwardly of said annular cavity and toward the associated root surface of each said recess such that said tooth recess sidewalls of each recess reach a transverse dimension less than the diameter of said locking pin at a point in the travel path of said pin in each said recess such that the locking pin cannot touch the bottom of said root surface of each said tooth recess and such that said locking pin seats, in locked position, against said sidewalls of each said tooth recess without bottoming in the same.

A method for swivel mounting on a fishing boat of downrigger and/or planar board masts used for fishing, said method comprising the steps of:

- (a) providing a planar mounting base plate,
- (b) providing a pair of laterally spaced apart columnar supports affixed at a longitudinal bottom end thereof to said base plate and extending perpendicularly upwardly therefrom,
- (c) providing a planar bottom plate stationarily supported on a longitudinal upper end of each said support opposite said bottom end thereof,
- (d) providing a planar bottom bearing stationarily supported on said bearing plate on the upper side thereof remote from said supports,
- (e) providing a planar top bearing stationarily affixed to said bearing plate and spaced upwardly therefrom and coaxial with said bottom bearing,
- (f) providing a planar rotatable swivel top plate supported on and sandwiched slidably between said top and bottom bearings for rotation in a plane generally parallel to the major planes of said base plate and said bearings, said rotatable swivel plate being adapted to carry a downrigger and/or planar board mast load to be swiveled by said rotation of said rotatable swivel top plate,
- (g) providing an indexable locking system for selectively locking said rotatable swivel top plate in any one of a plurality of angularly spaced positions, and
- (h) providing a mounting track mounted on a gunnel or transom of the fishing boat, said track having side edge flanges with mutually facing in-turned lips, and slidably mounting said assembly base plate in said track with said track flange lips overlapping said

opposite side edges of said base plate, said base plate carrying locking means for releasably locking said base plate at a desired location along said track.

32.

The method set forth in claim 31 wherein said indexable locking system comprises a negative gear-like profile formed in said face of said swivel plate adjacent said bottom bearing, said gear-like profile including an annular cavity defined by a recessed wall inset from and parallel to said swivel plate sides and bounded on its inner diameter by a cylindrical wall surface concentric with said bearings, said cavity recessed wall being bounded on its outer periphery by equally angularly spaced tooth peak surfaces that define an interrupted cylindrical surface of larger diameter than, and concentric with, said inner cylindrical wall surface, said gear-like profile further including a plurality of equally angularly spaced teeth cavities extending entirely radially outwardly from said interrupted cylindrical surface, said cavities being individually arranged between each of said pairs of tooth peak surfaces, and further including a locking pin operably supported by said bearing plate so as to be operable in said annular cavity to be spring biased into selective engagement with a selected one of said teeth root cavities to thereby lock said rotatable swivel plate at a fixed angular position relative to the remaining components of said base assembly, and withdrawal of said locking pin from said selected tooth cavity thereby enabling free rotation of said swivel plate relative to the remaining components of said base assembly.

33.

The method set forth in claim 32 including a locking lever pivotally mounted to said bottom bearing plate and carrying said locking pin, said bearing plate and said bottom bearing each having arcuate slots formed therein through which said locking pin extends into said annular cavity for swinging in an arcuate travel path between engaged and disengaged positions relative to said teeth root cavities of said gear-like profile in said swivel plate, said lever being pivotally mounted to operate as a lever of the first class with one end carrying said locking pin and the opposite end carrying an operating handle, and further including a coil spring coupled between said lever and a stationary component of said base assembly such that said lever is normally spring biased to pivot in a direction to drive said locking pin toward the root or bottom of whichever negative tooth recess it is selectively registered.

34.

The method set forth in claim 33 wherein said lever handle is oriented to extend downwardly from said lever toward said mounting base plate.

35.

The method set forth in claim 34 wherein said lever handle is constructed and arranged such that it is swung in a direction outwardly away from said assembly to retract said locking pin out of registry with the selected negative locking teeth in said swivel plate and into the annular space between said cylindrical wall surface and said teeth apices whereupon said swivel plate is free to swivel about the axis of said top and bottom bearings, and such that once unlocking force is removed from said lever by releasing said handle said spring is operable to

bias said lever to force said locking pin against whichever tooth apex it may be registered, whereupon swivel motion of said swivel plate that registers said locking pin with an adjacent tooth cavity allows spring bias on said lever to snap force said pin into such cavity.

36.

The method set forth in claim 35 wherein the circumferentially spaced pair of tooth corners at the circumferentially opposite ends of each tooth apex are relatively sharp and have a small radius dimension to thereby produce a snap action drop in of said locking pin as said spring forces said lever in the lock-up direction.

37.

The method set forth in claim 35 wherein said negative tooth recesses are individually generated along a longitudinal centerline that is curved with the same radius as the arcuate path of travel of said locking pin whereby upon said lever being released, such curvature of each tooth recess allows a quick drop in action of said locking pin upon being initially registered with a selected tooth recess and then forced into such recess under the biasing force of said spring.

38.

The method set forth in claim 37 wherein the sidewalls of each said tooth recess are tapered so as to converge slightly radially outwardly of said annular cavity and toward the associated root surface of each said recess such that said tooth recess sidewalls of each recess reach a transverse dimension less than the diameter of said locking pin at a point in the travel path of said pin in each said recess such that the locking pin cannot touch the bottom of said root surface of each said tooth recess and such that said locking pin seats, in locked position, against said sidewalls of each said tooth recess without bottoming in the same.